BOBINE letter of commitment

ISIS Neutron and Muon Source is based at the STFC Rutherford Appleton Laboratory in Oxfordshire and is a world-leading centre for research in the physical and life sciences. It is owned and operated by the Science and Technology Facilities Council, one of the councils that forms UK Research and Innovation (UKRI). ISIS Neutron and Muon Source produces beams of neutrons and muons that allow scientists to study materials at the atomic level using a suite of instruments each of which is individually optimised for the study of different types of matter. Neutron and muon experiments are non-destructive and provide results that cannot be achieved by other techniques. ISIS supports a national and international community of more than 2000 scientists who use neutrons and muons for research in physics, chemistry, materials science, geology, engineering, and biology.

The employment of High Magnetic Fields (HMF) and Ultra Low Temperatures (ULT) provides a key tool in the investigation strongly correlated electron phenomena with neutron based techniques. As such, the magnets developed within the project BOBINE will be unique opportunity to strengthen the European large-scale research infrastructure. With a joint European 20T static magnet and a 40T pulsed magnet, both combined with a bespoke ULT dilution refrigerator inserts, BOBINE will significantly extend the available parameter range towards more extreme sample environment. The project will bring unique opportunities for the exploration of quantum disordered systems or exotic electronic ordering phenomena, especially in combination with the latest generation of neutron scattering instruments. BOBINE will be a key development towards the discovery of exciting new physics. Moreover, the technology employed in BOBINE, based on high temperature superconductors, will serve as a prototype for future high performance magnets, with potential use beyond neutron scattering applications.

We believe that the BOBINE project provides a very interesting and promising contribution towards a stronger and more competitive European neutron research landscape. We at ISIS Neutron and Muon Source foresee a strong request from our user community to have access to HMF and ULT temperature range to address scientific challenges mainly from, but not limited to, the area of information and quantum technologies. We strongly support the BOBINE project and are committed to contribute to the project by providing the infrastructure to conduct the project and the operation of the systems on the neutron scattering beamlines at our facility.

Furthermore, we will explore securing beam-time for hot commissioning of both magnets in pilot experiments.

Roger S Eccleston

ISIS Director